CLAIM SET AS AMENDED

1. (Currently Amended) A method for counting particles, comprising the steps of:

successively passing multiple particles through a particle sensing zone in the form of an orifice through which an electric current is flowing;

introducing a first electrical signal into said particle sensing zone for a period of time;

measuring a second electrical signal emanating from said particle sensing zone, said second electrical signal being caused by modulation of said first electrical signal by said particles passing through said particle sensing zone;

generating raw data using said second electrical signal, said raw data correlating to a raw count of particles passing through said particle sensing zone, a wait time count and a size of each particle;

calculating a true average flight time using said size of each particle; and

processing said raw data by using ~~a~~ said true average flight time and a true average wait time to obtain a corrected count of particles.

2. (Original) The method of claim 1, wherein said particles are biological particles.

3. (Original) The method of claim 1, wherein said particles are blood cells.

4. (Original) The method of claim 1, wherein said particles comprise white blood cells.

5. (Original) The method of claim 1, wherein a sample containing multiple particles of sizes varying by more than 50% is passed through said measuring chamber.

6. (Original) The method of claim 5, wherein said sample has a particle concentration so high that the average time between particles is less than the flight time.

7. (Original) The method of claim 1, wherein said particle sample is one which is expected to have a particle density variability of greater than 50 fold between various different samples.

8. (Currently Amended) The method of claim 1, wherein the true average flight time corresponds to a true average ~~flight~~ time that said second signal is above a threshold using said size of each particle.

9. (Original) The method of claim 1, wherein the true average wait time corresponds to a true average time that particles are absent from the sensing zone.

10. (Original) The method of claim 1, further comprising using an average period correction method calculation and an enhanced coincidence correction calculation to correct raw data to account for particle size variability in said sample.

11. (Currently Amended) An apparatus for counting particles in a sample, comprising:

one or more particle sensors, each sensor having a sensing zone;

a particle delivery unit for delivering particles to at least one of said particle sensing zones, said particles passing through at least one sensing zone;

a particle measuring unit for determining the size of particles passing through at least one of said particle sensing zones, said sensor generating a particle size signal, and for determining the number of particles that pass through at least one of said particle sensing zones in a given period of time, said particle sensor generating a particle number signal;

a wait time measuring unit which measures the time there are no

~~particles in at least one of the sensing zones in a given period of time;~~

a device for calculating ~~the~~ a true average flight time of said particles in said sample based on said particle size signal ~~and said particle number signal~~; and

a correcting unit for correcting an apparent particle count to an adjusted particle count by adding a true average flight time to a true average wait time to obtain a corrected count of particles.

12. (Currently Amended) An apparatus for counting particles, comprising:

a chamber having an inlet, an outlet and a particle sensing zone located between said inlet and said outlet;

a pump for passing a fluid containing particles into said inlet, through said particle sensing zone and out of said outlet;

an electric source arranged to pass an electric current through said particle sensing zone;

an electric current detector for measuring electric current as particles pass through said particle sensing zone, said detector generating raw data indicative of the number of particles passing through said particle sensing zone, ~~indicative of the true wait time,~~ and indicative of the size of particles passing through said particle sensing zone; and

a program for processing raw data from said detector, said program calculating a true average flight time using the size of the particles, calculating a true average wait time from the true wait time divided by the number of particles passing through said particle sensing zone and adding said ~~having the capability add~~ true average flight time to true average wait time to give a true average period value whose inverse value is a corrected count.

13. (Original) The apparatus of claim 12, wherein said program uses an average period correction method calculation and an enhanced coincidence correction calculation to correct raw data obtained from said detector to account for particle size variability in said sample.

14. (Currently Amended) A method for counting particles, comprising the steps of:

successively passing multiple particles through a particle sensing zone;

introducing a first signal into said particle sensing zone for a period of time;

measuring a second signal emanating from said particle sensing zone, said second signal being caused by modulation of said first signal by said particles passing through said particle sensing zone;

generating raw data using said second signal, said raw data correlating

to a raw count of particles passing through said chamber, a wait time count and a size of each particle;

calculating a true average flight time using said size of each particle; and

performing coincidence correction by processing said raw data by using a said true average flight time.

15. (Currently Amended) A method for determining the actual number of particles in a sample containing a plurality of particles of varying size; comprising the steps of:

I. passing the particles sequentially through a raw counting device which produces an analog voltage signal;

II. converting said analog voltage signal to a digital signal comprising a plurality of series of voltage pulses wherein each pulse is caused by the passage of one or more particles through the raw counting device; wherein each series has a beginning and an end wherein the time difference between said beginning and said end is defined as the duration of each series wherein ~~the sum of the duration of all series is defined as the raw flight-time and wherein~~ the time between series is defined as ~~the raw wait-time~~ wait time;

III. converting the peak of the analog voltage signal to digital particle size data;

~~III.~~IV. converting ~~the raw flight-time to the true flight-time~~ digital particle size data into a size frequency graph;

V. generating an average channel size from said particle size frequency ~~graph;~~

VI. converting said average channel size into a true average flight time;

~~IV.~~VII. converting the raw ~~wait-time~~ wait time to ~~the~~ a true ~~average~~wait-time wait time;

~~V.~~VIII. employing the true average flight-time and the true average ~~wait-time~~ wait time to calculate the total true flight time and the total true wait-time to calculate the actual number of particles in a sample.

16. (Currently Amended) An apparatus for determining the actual number of particles in a sample containing a plurality of particles of varying size, said apparatus comprising:

A. a particle counting device which produces a weak analog signal being a series of low voltage pulses ~~wherein the duration of each single pulse is proportional to the time taken for one or more particle to pass through the counter~~;

B. a preamp which receives said weak analog signal from the particle counting device; amplifies the weak analog signal and produces a voltage signal (Vsig);

C. a comparator which receives said voltage signal (Vsig) from the preamp and compares said voltage signal (Vsig) with a predetermined voltage threshold (Vth) and produces a digital output signal being a series of digital pulses wherein ~~the duration of each pulse corresponds to the amount of time that~~ the voltage signal had a voltage greater than the predetermined voltage threshold (Vth);

D. a raw particle count generator which receives the digital output signal from the comparator and produces a raw count of the number of particles;

E. an average raw count generator which receives the raw count of the number of particles from the raw particle count generator, and averages them thereby producing an average raw count;

F. a megahertz clock which produces a clock signal;

G. an AND gate which receives the clock signal from the megahertz clock and the digital output signal from the comparator and produces a digital output signal comprising a series of digital ~~pulses interspersed with periods devoid of said digital pulses~~ clock pulses when the digital out signal is low indicating the signal Vsig is below the threshold Vth;

H. a raw ~~wait-time~~ wait time counter which receives the digital output signal from the AND gate determines ~~the~~ a raw ~~wait-time~~ wait time between adjacent series of pulses thereby producing a ~~wait-time~~ wait time count;

I. a corrected average flight-time generator which receives information based on said voltage signal (Vsig) peak from the preamp and produces ~~the~~ a corrected average flight-time;

J. an average period count generator which receives:

1. the average raw count from the average raw count generator;

2. ~~the~~ an average ~~wait-time~~ wait time from ~~the~~ an average wait-time count generator; and

3. the corrected average flight-time from the corrected average flight-time generator;

and which employs the average raw count; the average wait-time; and the corrected average flight-time to produce an average period count;

K. a coincidence-corrected count generator which receives the average period count from the average period count generator and which also receives an empirically determined correction factor; and then applies an enhanced coincidence correction formula and the empirically determined correction factor to the average period count, thereby determining ~~the~~ a true count of the number of particles in the sample.